AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

Claim 1 (currently amended): A location information transmission method for reporting on-road location information on a first digital map by an information transmission system, comprising the steps of:

transmitting on-road location information by an information provider, the on-road location information including: a string of coordinates line information representing a road shape of a road section ~~having a length determined depending on difficulty of shape matching~~; additional information including an information item selected from a group consisting of attribute information on said road section including a road location of said road section and detailed information on nodes in said road section;

receiving said on-road location information by a receiver having a second digital map ~~portable navigation apparatus~~; and

performing shape matching to identify said road section on [[a]]the second digital map of the ~~portable navigation apparatus~~ receiver based on the string of coordinates line information and the additional information.

Claim 2 (previously presented): A location information transmission method according to claim 1, wherein a string of coordinates where coordinate data indicating the positions of the nodes and interpolation points included in said road section are arranged sequentially is used as said string of coordinate information.

Claim 3 (previously presented): A location information transmission method according to claim 2, wherein an interpolation point that contributes less to shape matching is omitted from the interpolation points included in said road section.

Claim 4 (previously presented): A location information transmission method according to claim 3, wherein said interpolation point is omitted from said interpolation points where a change in bearing is less than a predetermined angle with respect to bearing from an adjacent interpolation point or node and a distance from said interpolation point or node is less than a predetermined distance.

Claim 5 (previously presented): A location information transmission method according to claim 2, wherein said string of coordinate information comprises coordinate data of a member chosen from a group of nodes

and interpolation points included in said road section, the coordinate data being represented using absolute coordinates and data of members of nodes and interpolation points excluding said chosen member, the data being represented using relative coordinates.

Claim 6 (previously presented): A location information transmission method according to claim 1, wherein said additional information includes at least one information item chosen from a group consisting of road type code, road number, toll highway code, number of traffic lanes, regulation information, road width, number of connecting links to a crossing node, and connection angle of each connecting link to a crossing node.

Claim 7 (previously presented): A location information transmission method according to claim 6, wherein said additional information includes accuracy information relating to a digital map data used to generate the on-road location information.

Claim 8 (previously presented): Method for thinning-out a plurality of points representing a road shape by an information transmission system, comprising steps of:

providing a string of coordinates defining said plurality of points;

determining whether the bearing deviation, d_n, of an interpolation point, P_n, of said string of coordinates from a preceding interpolation point, P_{n-1}, of said string of coordinates is smaller than a predetermined angle, α;

determining whether a distance, g_n, of the interpolation point, P_n, from the preceding interpolation point, P_{n-1}, is shorter than a predetermined length, β; and

omitting the interpolation point, P_n, from the string of coordinates if both $d_n<\alpha$ and $g_n<\beta$ as determined in the determining steps;

transmitting the string of coordinates from which the interpolation point, P_n, is omitted from the information transmission system.

Claim 9 (previously presented): The method of claim 8, further comprising a step of incrementing the value of n by 1 and then repeating the steps of determining and the step of omitting.

Claim 10 (previously presented): The method of claim 8 wherein each of the points is represented using relative information based on one of the plurality of points.

Claim 11 (currently amended): A location information transmission method according to claim 1, wherein the on-road location information includes relative information indicating an on-road location in said road section, the method further comprising a step of performing identifying the on-road location in the road section using the relative information by the receiver ~~portable navigation apparatus~~.

Claim 12 (new): A transmission apparatus comprising:

a digital map;

an information generator that generates, based on the digital map, on-road location information including: a string of coordinates line information representing a road shape of a road section and additional information including an information item selected from a group consisting of attribute information on said road section including a road location of said road section and detailed information on nodes in said road section; and

a transmitter that transmits the on-road location information to a receiving apparatus having a digital map different from the digital map of the transmission apparatus.

Claim 13 (new): A receiving apparatus comprising:

a digital map;

a receiver that receives on-road location information including: a string of coordinates line information representing a road shape of a road section and additional information including an information item selected from a group consisting of attribute information on said road section including a road location of said road section and detailed information on nodes in said road section from a transmission apparatus having a digital map different from the digital map of the receiving apparatus;

an identifying unit that performs shape matching to identify said road section on the digital map fo the receiving apparatus based on the on-road location information.